

CHAPTER 1

ADMINISTRATIVE STRUCTURE OF RADIATION CONTROL PROGRAM

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POLICY STATEMENT
UNIVERSITY-WIDE SAFETY PROGRAM
ENVIRONMENTAL HEALTH AND SAFETY DIVISION

The environmental health and safety program was established in 1974. Its basic objectives are to minimize injury to faculty, staff, students, and visitors, and to minimize damage to University property. Inherent in these objectives is the responsibility to provide a safe and healthy environment in which to pursue the University's activities. This policy statement implements Chapter 6C-10.02 of the rules governing the Board of Regents under the Florida Administrative Code. This policy statement outlines the University's environmental health and safety program and delineates responsibilities.

DELINEATION OF RESPONSIBILITIES:

President

Responsibility for all matters pertaining to radiation and laboratory safety and the assurance that the University moves toward compliance with all State and Federal regulations related to safety.

Delegates authority for these matters to the Vice President for Business Affairs.

Vice President for Business Affairs

Assumes institutional responsibility, through the Division of Environmental Health and Safety and an advisory committee, for the general pattern of overall safety practices and their effective administration at all University facilities.

Works with Deans, Directors, and Department Chairpersons, through the Division of Environmental Health and Safety and an advisory committee, in establishing a program that meets all laws, codes, regulations, and standards pertaining to safety of all employees and personnel associated with the University.

Recommends to the President appointments to an Environmental Health and Safety Advisory Committee to serve as an advisory body to the program, providing advice, recommendations, and support to the Division Director.

Assures there is strong working liaison between this Division and all other units in the University, particularly the Departmental Safety Committees, Student Health Services, Physical Plant Division, and the Personnel Division.

Division of Environmental Health and Safety

This division shall consist of five departments: (1) the Department of Facility and Fire Safety which includes the Pest Control and Fire Equipment Services Units, (2) the Department of Radiation Control and Radiological Services, (3) the Department of Occupational and Research Safety, (4) the Department of Diving Science and Safety, and (5) the Department of Hazardous Materials Management.

In general, the responsibilities of this Division include the following:

1. Serves as the safety technical services unit to all areas of the University.
2. Interprets safety codes and regulations.
3. Recommends, establishes and implements safety policies throughout the University.
4. Appoints technical committee to aid Radiation Control and Radiological Services.
5. Reviews all plans and specifications for new buildings, modifications and renovations to ensure compliance with safety codes, standards and regulations.
6. Performs periodic safety inspections to assist all colleges, divisions, and departments to ensure compliance with Federal and State health and safety laws, codes, and regulations.
7. Maintains all records required by Federal and State agencies relative to safety.
8. Prepares periodic reports evaluating the environmental health status of the University.
9. Maintains on file, copies of all state and federal laws, codes, and standards relative to health and safety.
10. Monitors safety aspects of chemical, biological and other research activities.
11. Conducts laboratory safety surveys.
12. Provides for hazardous waste disposal.
13. Provides for testing and certification of protective airflow devices.
14. Monitors employee exposure to hazardous materials and/or environments.
15. Investigates fires involving University owned and leased facilities.
16. Administers the University asbestos management program.
17. Administers the University pollutant storage tank program.
18. Administers the University indoor air quality program.
19. Provides fire equipment services University-wide.
20. Provides pest control services University-wide.
21. Provides dive safety services University-wide.
22. Administers a University-wide occupational medicine program.

23. Investigates all job-related accidents other than vehicular.
24. Initiates enforcement actions whenever necessary.
25. Assists other University units in any area of safety when requested.
26. Conducts safety education programs.
27. Coordinates the University emergency management program.

More specific responsibilities of the Department of Radiation Control and Radiological Services are provided in the University Radiation Control Guide and in the University Handbook of Business Procedure, Chapter V.

Deans, Directors, or Department Chairpersons

Divisions, Colleges, and/or Departments should establish safety committees or have a person in each department or unit to make periodic safety inspections; they are expected to call upon the Division or Environmental Health and Safety when unusual problems are met or when safety advice or consultation is desired. These departmentally designated safety personnel are a key factor in assuring a safe environment for University employees, students, and visitors.

It is recommended that at this administrative level (Deans, Directors, and Department Chairpersons) the following should be done:

Appoint a safety coordinator and/or a safety committee and define their duties. (Basic guidelines for departmental safety coordinators are available from the Environmental Health and Safety Division.) The safety coordinators should serve as the departmental liaison with the Environmental Health and Safety Division.

Publish statements of safety policy reflecting and amplifying statements of the Vice President for Business Affairs. Variations from the general policies of the Vice President for Business Affairs and the Environmental Health and Safety Division should be implementation details only and not basic philosophy. Philosophical differences should be brought up before the Environmental Health and Safety Advisory Committee through the Division of Environmental Health and Safety.

Be responsible for the safety programs pertinent to the personnel and facilities under their direction.

Disseminate safety policies of the Division of Environmental Health and Safety to all employees in their unit.

Notify all faculty members, supervisors, or unit heads that they are responsible for implementation and enforcement of University safety regulations in their areas of responsibility.

RADIATION PROTECTION PROGRAMS

Radioactive material under license by either State or Federal agencies must be used under an approved radiation protection program. This program is designed to protect the health and safety of the workers and public from potentially harmful effects of radiation through maintaining both external and internal exposures As Low As Reasonably Achievable (ALARA).

A Radiation Safety Officer (and in large institutions, a Radiation Safety Committee) has the responsibility to implement the radiation protection program. Such a program would include:

1. Authorization of individuals and work areas for use of radioactive materials or radiation producing equipment;
2. Assuring the safe use of radioactive material and radiation producing equipment;
3. Approval of all purchases of radioactive material;
4. Maintaining an inventory of all radioactive material received;
5. Assuring that all required surveys and records are maintained;
6. Certifying the proper disposal of radioactive waste;
7. Providing external and internal radiation exposure monitoring;
8. Leak testing of sealed radioactive sources;
9. Analysis and testing for radioactive material;
10. Assisting users in the design and implementation of laboratory experiments, safety equipment, etc.
11. Surveys of radiation producing equipment;
12. Calibration of radiation detection instruments;
13. Responding to radiation emergencies;
14. Providing training to workers.

Routine and unannounced inspections of laboratories and other use areas for compliance with applicable rules and regulations are performed by radiation safety personnel. Those working with radioactive material or radiation producing equipment have the responsibility to report promptly to authorities any condition which may lead to or cause a violation of radiation safety regulations or cause unnecessary exposure to radiation or radioactive material. Thus, workers must be familiar with the conditions of their radioactive materials license and applicable State (or Federal) regulations.

The University of Florida Radiation Protection Program

Federal rules and regulations concerning radioactive material are contained in the Code of Federal Regulations, Title 10, Part 20 -- Standards for Protection Against Ionizing Radiation (hereinafter referred to as 10CFR Part 20) and are promulgated by the U.S. Nuclear Regulatory Commission (NRC). The State of Florida is one of the 29 Agreement States. An Agreement State is a state that has negotiated an agreement with the NRC (or its predecessor, the U.S. Atomic Energy Commission (AEC)) to self-regulate the use of radioactive materials within that state.

The State of Florida regulations concerning the use of radioactive material and radiation producing devices is entitled Florida Administrative Code, Chapter 64E-5 – Control of Radiation Hazard Regulations (hereinafter referred to as Chapter 64E-5). Radioactive material and radiation sources at the University of Florida must be used in accordance with the rules and regulations contained in Chapter 64E-5 and under the conditions specified in several radioactive materials licenses issued by the State of Florida Department of Health, Bureau of Radiation Control. The Radiation Control Department has developed a radiation safety program in order to assure compliance with the provisions of these documents. This program is designed to protect the health and safety of the members of the University community and the public from potentially deleterious effects of radiation through maintaining both external and internal exposures as low as reasonably achievable (ALARA).

The University of Florida regulations are outlined in the “Radiation Control Guide”. This guide sets forth the rules and procedures of the University safety program. Users must become familiar with regulations in the appropriate sections of the manual. Many of the regulations in the manual are based on the requirements set forth in Chapter 64E-5.

The Radiation Control Department performs periodic inspections of radionuclide laboratories and radiation installations to assure compliance with the control guide, license and Chapter 64E-5. Violations of established rules, regulations and procedures may result in the loss of privilege to use radioactive material as well as cause an undo hazard to both the user and the people in the surrounding work area. Therefore, radiation safety can only succeed when each user follows both the spirit and the actual rules described by the Radiation Control Guide and this study guide.

ADMINISTRATIVE STRUCTURE OF RADIATION CONTROL PROGRAM

I. INTRODUCTION

In view of increased utilization of ionizing and nonionizing radiations at the University of Florida, a university-wide radiation control program was established in September 1960. The primary responsibilities of the radiation control program are to assure radiological safety of all University personnel and the public, to guarantee that ionizing and nonionizing radiation sources are procured and used in accordance with Federal and State regulations, and to assure that radiation exposures are as low as reasonably achievable.

This Guide sets forth policies, regulations, and procedures approved by the University's Radiation Control Committee. The regulations and procedures outlined in this Guide are intended to protect all individuals with a minimum of interference in their activities and are consistent with regulations of the U.S. Nuclear Regulatory Commission (NRC) and the Florida Department of Health, Bureau of Radiation Control (DOH). The regulations set forth are applicable to all radiation facilities under the administration of the University of Florida. Several areas and uses, such as the training reactor, human use, and multicurie irradiators, require more specific and restrictive regulations. Finance and Administration Memorandum No. 22 of May 24, 1974 structures a Radiation Control and Radiological Services (RC&RS) Department, headed by the Radiation Control Officer, under the Environmental Health and Safety Division.

The following specific responsibilities of the Radiation Control Committee and the Radiation Control Officer were set forth in a memorandum from the Office of the President, September 23, 1960.

A. Radiation Control Committee (RCC)

1. Review and grant permission for, or disapprove, the use of radionuclides or other sources of ionizing radiation within the institution from the standpoint of radiation safety.
2. Prescribe special conditions and requirements which may be necessary to ensure radiation safety (e.g., physical examinations, additional training, designation of limited areas or locations of use, disposal methods, etc.).
3. Prepare and disseminate information on radiological safety (including University, State and Federal regulations governing ionizing radiation), for use and guidance of students and staff.
4. Pass judgment on the adequacy of safety measures for safeguarding University research workers. Committee approval of health and safety measures must be obtained before initial use of radionuclides or other ionizing radiation is undertaken or before substantially different uses from those originally approved by the Committee are undertaken. After the issuance of a restraining order by the Committee, the staff member concerned would have a final recourse to the Director, EH&S, after approval for such action by his Dean or Chairperson.

5. Keep records of the actions taken in approving the use of radionuclides and other sources of ionizing radiation and other transactions, communications and reports involved in the work of the Committee.
6. Delegate to the Radiation Control Officer the authority to act for the Committee between meetings. His actions will be reported to the Committee for review at appropriate intervals.
7. Review plans for all new buildings and modifications for existing structures where ionizing radiation is to be used.
8. Recommend and implement procedures for radioactive waste disposal.
9. Periodically review actions of the Reactor Safety Review Subcommittee.
10. Review at least annually from a radiation safety standpoint, the activities of the Committee on Human Use of Radioisotopes and Radiation.
11. Review all ongoing projects at timely intervals.
12. Provide advice to research groups, departments and investigators.

B. Radiation Control Officer (RCO)

1. Administer the overall day-to-day programs of the University's Radiation Control Office.
2. Approve all University procedures which might conceivably involve radiation exposure and all changes in such procedures.
3. Act in a supervisory capacity in all aspects of the University radiation measurement and protection activities, such as personnel monitoring, maintenance of exposure records, survey methods, waste disposal and radiation safety practices.
4. Consult with potential radionuclide users and advise on radiation safety practices.
5. Suspend any operation causing excessive radiation hazards as rapidly and safely as possible. In carrying out this duty the Radiation Control Officer will report directly to the Director, EH&S.
6. Maintain a list of all employees who may be exposed to ionizing radiation.
7. Prescribe routine radiation surveying and personnel monitoring.

8. Establish standardized procedures for the procurement of radioactive materials.
9. Serve as ex officio member of all radiation safety committees constituted at the departmental, college, experiment station, or university levels.

C. Responsibilities of Principal Investigator (PI)

The Principal Investigator has the overriding responsibility for the safe use of radioactive materials and radiation sources in the lab. The responsibilities include:

1. Administer and enforce safety rules and regulations as stated in the Radiation Control Guide, which are necessary to the radiation control program in all areas within the scope of their authority.
2. Inform all employees of potential health hazards and the necessary safeguards which are established to guard against them.
3. Ensure that all employees working with, or in the vicinity of, radionuclides or radiation producing devices are properly trained and monitored.
4. Inform the Radiation Control Office of all changes in personnel working with radionuclides or radiation producing devices and changes in facilities or use locations.
5. Maintain control over radioactive materials and maintain adequate inventory records. Perform weekly contamination surveys when radionuclides are in use.
6. Ensure that all radioactive waste is received by Radiation Control and Radiological Services for ultimate disposal.
7. Ensure safe and secure storage of all radioactive materials.

D. Human Use of Radioisotopes and Radiation Committee (HURRC)

1. Responsible for monitoring the human use institutional program to maintain occupational doses as low as reasonable achievable.
2. Review and approve, or disapprove, any individual to be an authorized user, the radiation control officer, or teletherapy physicist, based on radiation safety and the training and experience standards of this part before sending a license application or request for amendment or renewal.
3. Review and approve, or disapprove, each proposed method of use of radioactive material, radiation, or radiation from radioactive materials on human research subjects based on radiation safety.

4. Review and approve, or disapprove, procedures and radiation safety program changes based on radiation safety and with the advice of the RCO and the management representative prior to sending to DOH for licensing action.
5. Review occupational exposure records of all personnel working with radioactive materials, radiation, or radiation from radioactive materials on human research subjects and all incidents to determine cause and review subsequent actions taken.
6. Review the human use institutional program annually with the assistance of the RCO.
7. Establish levels for occupational dose that will result in investigations and considerations of action by the RCO when needed.

E. Radioactive Drug Research Committee (RDRC)

The University of Florida RDRC, Committee Number 0129, has been approved by the Center for Drug Evaluation and Research of the Food and Drug Administration and must comply with the requirements of 21 CFR Part 361.1. The RDRC is not responsible for the review and approval of projects authorized under an IND issued by the FDA.

II. AUTHORIZATION TO USE RADIOACTIVE MATERIALS AND RADIATION PRODUCING DEVICES

A. Initial Approval

Any University faculty member wishing to utilize radioactive materials or radiation producing devices in research studies must obtain approval of the Radiation Control Committee. Approval is obtained by completing and submitting a proposal to the Committee through the Radiation Control Office describing such items as: (a) the facility where the radionuclides will be used, (b) the radionuclide(s) which will be used, and (c) the procedures which will be followed in using radioactive materials. This proposal should point out radiation safety precautions which will be taken to prevent the spread of radioactivity to the environment and to protect University personnel.

No request for approval to use radionuclides will be denied by the Radiation Control Committee before the investigator is given an opportunity to discuss his application with the Committee.

The following forms must be completed and submitted with the proposal:

1. "Statement of Training and Experience" (Form RC-1) for each investigator, staff member and student who will be using radioactive materials under the proposal.

2. "Proposal Summary Sheet".

Blank forms are available from the Radiation Control Office (Room 212 NSC). Prior to Committee approval, facilities will be inspected by Radiation Control and Radiological Services personnel.

Upon approval of the proposal, the Principal Investigator becomes an approved user under the University of Florida's license. The PI does not receive an individual license to use radioactive material and therefore must comply with the regulations established under the license secured by the University of Florida.

B. Transfer of Responsibilities

Prior to extended leaves of absence and sabbaticals, the Principal Investigator must obtain Radiation Control Office approval for transfer of responsibility for the day to day supervision of work involving radioactive materials and radiation producing devices. The individual assuming the responsibility must be an approved Principal Investigator.

C. Procurement and Receipt of Radioactive Materials

After submitting a proposal and obtaining approval by the Radiation Control Committee, a Principal Investigator may obtain radioactive material. In order to comply with inventory and control requirements of the DOH, the PI must submit their request through the Radiation Control Office who shall approve all radioactive material orders prior to placement of such orders. The PI should not automatically contact a vendor to procure radioactive material or radiation sources.

Radiation Control will withhold approval of requisitions for radioactive materials unless

1. The Principal Investigator's name and current Radiation Control Number (RC#) is listed, indicating PI approval by the Radiation Control Office. This information can be entered in the space SHIP TO/ATTN: PI name / RC#. The requisition must be submitted through the purchasing system with the correct commodity code to forward to Radiation Control for review and approval.
2. The correct address must be entered into the purchasing system. All radioactive materials must be received and processed by the Radiation Control Department prior to delivery to the lab. The current purchasing program has this address available in the system.

UF Radiation Control Department
EHS Program Support, Bldg 683
Surge Area Drive
Gainesville, FL 32608

NOTE: RADIOACTIVE MATERIAL CAN NOT BE PURCHASED ON A UF PURCHASING CARD (P-CARD).

D. Procurement of Radiation Producing Devices

The purchase of any device which produces ionizing or nonionizing radiation must be approved by the Radiation Control Office. The requisition must be submitted through the purchasing system with the correct commodity code to forward to Radiation Control for review and approval.

These devices include x-ray diffraction units, research irradiators, radiographic units, gas chromatographs (EC detector), and lasers. For additional purchasing information, call the Radiation Control Office at 392-7359.

E. Receipt of Radioactive Material Shipments

The Radiation Control Office is required to inspect all incoming packages containing radioactive materials. After this inspection, the package will be delivered to the ordering laboratory.

III. RADIATION DETECTION INSTRUMENTATION AND SAFETY EQUIPMENT

The Principal Investigator is responsible to ascertain that suitable radiation detection instruments, personnel monitoring devices, and other necessary safety equipment are available in all radiation facilities for which he is responsible and that the equipment is in working order.

A. Radiation Detection Instruments (Survey Meters)

Calibrated survey meters which are appropriate for the type and level of ionizing radiation being used must be available. Survey meters must be calibrated every 6 months. Contact the Radiation Control Office for instrument calibration.

B. Personnel Monitoring

Personnel monitoring devices must be worn by personnel as specified below and/or in such instances as deemed necessary by the Radiation Control Officer.

1. Whole Body Luxel/Film/TLD Badges

Badges shall be worn when:

- a. working with beta emitters where the energy is 1 MeV or higher and the quantity greater than 1 millicurie (37 MBq).
- b. working with any gamma emitters in amounts greater than 0.2 millicuries (7.4 MBq).
- c. working with neutron sources. Special neutron badges may be required in addition to other badges.

- d. working with any apparatus capable of producing or emitting ionizing radiation as deemed necessary by the Radiation Control Officer. For example, x-ray equipment, high power amplifying tubes, accelerators, etc.
- e. specified by the RCO, RCC and/or HURRC.

All monitoring devices shall be obtained from the Radiation Control Office. Each Luxel/film/TLD badge shall be assigned to and worn by only one individual. Luxel/film/TLD's may be exchanged monthly, bimonthly, or quarterly depending upon monitoring device ware location and expected radiation exposure. Delivery, exchange and pickup of badges shall be the responsibility of the Radiation Control Office; however, these functions are performed in cooperation with Film Badge Coordinators in some work areas. In the event that a monitor is damaged, lost, or accidentally exposed, it is the responsibility of the Principal Investigator to notify the Radiation Control Office immediately for monitor replacement or processing. Permanent records of monitor readings are maintained by the Radiation Control Office. A copy of the monthly readings is mailed to the Film Badge Coordinator in each work area.

2. Pocket Ion Chambers

Pocket ion chambers may be required to be worn in addition to the film badge if other types of monitors are inadequate in the judgment of the Radiation Control Officer or the Radiation Control Committee. This shall apply where the investigator is working in a high radiation area or in some instances, working with high level radioactive materials or other ionizing radiations. When these devices are used, the principal investigator is responsible for maintaining daily pocket ion chamber records. Copies of these records shall be submitted monthly to the Radiation Control Office.

C. Exposure Reports

The Radiation Control Office shall provide annual radiation exposure reports to those individuals who have been assigned a personnel dosimeter. Termination radiation exposure reports will also be provided to those badged individuals who terminate employment requiring personnel dosimetry. Forwarding addresses must be available to facilitate this mailing.

IV. LABORATORY SURVEYING AND MONITORING

Each Principal Investigator is responsible for routine (minimum weekly, maximum monthly) area surveying and monitoring of radiation facilities to assure the absence of contamination. Monthly surveys are required when radionuclides are in storage. Permanent records shall be maintained by the investigator, for review by Radiation Control and DOH inspectors. The Radiation Control Office provides survey forms for recording survey results. Periodic and unannounced surveys and monitoring of radiation facilities will be made by representatives of the Radiation Control Office. Upon request, the Radiation Control Officer or his representative will survey and monitor a laboratory, experimental setup, and/or waste storage facilities.

V. MAXIMUM PERMISSIBLE EXPOSURE LIMITS

A. Occupational Dose Limits for Adults

The maximum permissible exposures listed below are specified by Federal regulations as set forth in the Code of Federal Regulations 10CFR Part 20 and by the Florida Department of Health regulations, Chapter 64E-5. The Federal and State exposure limits are the same.

Maximum Permissible Occupational Exposure to Adults or Restricted Area Exposure

1. The total effective dose equivalent must not exceed 5 rem (0.05 Sv) per year.
2. The sum of the deep dose equivalent and the committed dose equivalent to an individual organ or tissue other than the lens of the eye must not exceed 50 rem (0.5 Sv) per year.
3. The dose equivalent to the lens of the eye must not exceed 15 rem (0.15 Sv) per year.
4. The shallow dose equivalent to the skin or to any extremities must not exceed 50 rem (0.5 Sv) per year.

Since any radiation exposure is undesirable, it is important that all exposures be kept as low as possible. The maximum permissible ALARA exposures used at the University of Florida are more conservative than the State or Federal Regulations. Specific approval to operate under the more liberal State or Federal regulations must be obtained for any such occasion from the Radiation Control Committee and/or Human use of Radioisotopes and Radiation Committee by submitting a written proposal through the Radiation Control Officer.

B. Occupational Dose Limits to Minors

Occupational exposure to any individual who is under the age of 18 is permitted only if their exposure is limited to ten percent or less of the limits specified above for adult workers. For this reason, it is recommended that minors not be employed as full-time radiation workers.

C. Dose to an Embryo or Fetus for Women Who Have Declared Pregnancy

The dose to an embryo or fetus during the entire pregnancy from occupational exposure of a declared pregnant woman shall not exceed 0.5 rem (5 mSv). It is recommended that not more than 0.05 rem (0.5 mSv) be received by the embryo or fetus in any one month.

Authorized radiation users at the University of Florida should be aware of the fact that the Nuclear Regulatory Commission (NRC) and the State of Florida require instruction of women radiation workers in the hazards associated with radioactive materials and radiation and in the precautions and safety measures to be followed to minimize radiation exposure. These basic requirements are contained in 10 CFR 19.12 and 64E-5.902.

The NRC and State has advised its licensees that such instruction must include special instructions to "fertile females", regarding the risks to the unborn child associated with prenatal radiation exposure. In addition to the instruction requirement, the NRC and State require that special efforts be made to limit any exposure to the developing child.

The NRC has issued a regulatory guide to assist licensees in achieving compliance with this requirement. The regulatory guide requires that:

1. Women in jobs involving radiation exposure must be explicitly advised of the risk associated with prenatal exposure.
2. Particular efforts must be made to keep the radiation exposure of the embryo or fetus to the very lowest practical level during the entire gestation period in accordance with the National Council on Radiation Protection (NCRP), a recommendation adopted by the NRC and State.
3. Female employees must be advised that the NRC and State have regulated to ensure that the dose to an embryo or fetus during the entire pregnancy from occupational exposure of a declared pregnant woman does not exceed 0.5 rem (5mSv).

The requirements of 10 CFR 19, 64E-5 and the Regulatory Guide have been reviewed by the Radiation Control Committee and the following policies have been established:

1. An employee information packet (see Chapter V) will be prepared by the Radiation Control Office and distributed via the Principal Investigator, to all women who work in or frequent restricted areas.
2. Each woman receiving the information packet should be given the opportunity to ask questions regarding the regulations.
3. An attempt to selectively apply this requirement to certain women would necessitate soliciting personal information regarding fertility, intentions with respect to pregnancy, etc. Such questions are and would most certainly be so regarded as an invasion of privacy. Consequently, at the University of Florida, the information about risks of prenatal radiation exposure will be made available to all female employees and students who work in or frequent restricted areas.
4. As an approved radiation user and supervisor, the Principal Investigator is responsible to ascertain that all female radiation workers are apprised of the risks of prenatal radiation exposure. He/She must also take steps to minimize exposure to female employees who are or who may be pregnant; make available to all women who work in or frequent any restricted area under his/her supervision, the information packet, and provide all current and new women employees with an opportunity to ask questions concerning the regulations, the information packet and the levels of radiation exposure likely to be received as a result of current or future job assignments he/she have made or may wish to make.

While the information packet may appear to be directed only to "employees", it must be noted that female undergraduate and graduate students, as well as faculty members and research assistants, must receive these instructions. It should be understood that this instruction packet is intended to apply equally to all radiation workers including users of x-ray diffraction units and x-ray machines, as well as radionuclide users.

In order to assist you, the following steps have been taken:

1. Arrangements have been made with the appropriate University offices in order to insure that applicants are advised that the positions in which they are interested involve work with radioactive materials and access to restricted areas prior to the supervisory interview. Thus, it is important that you inform appropriate offices on all future personnel requisitions initiated to fill positions for radiation workers and for others whose duties require frequent access to restricted areas. Correspondence for new staff and the requisitions for employees filed with the Division of Human Resources, Student Employment Office, or the Dean of the Graduate School, should contain an explicit and clear comment, i.e., "This position requires work with radioactive materials and/or access to restricted areas". In order to insure that prospective radiation workers are fully informed prior to acceptance of your position, the employee or the student orientation obviously must include a discussion of the possible fetal radiation exposure risk involved and the duties, activities and job assignments you have or will establish for the position.

As an authorized radiation user and supervisor, you bear the ultimate responsibility to make certain that all female radiation workers have received the information packet and that they have acknowledged receipt thereof.

2. The Radiation Control Office is prepared to assist you in explaining this requirement to preferably small groups (up to 10 persons), as arranged by the department and hopefully with the participation of the authorized users.

The operation of this program will obviously require the careful and timely review of radiation exposure reports and appropriate action taken. If the radiation exposure reports are sent to a designated departmental contact rather than the authorized user, as is sometimes done as a convenience to the department, you must take steps to insure that the contact keeps you informed of the exposure to your personnel. It will also require that the Radiation Control Office be kept informed of the names of those persons who are using radioactive materials or radiation producing equipment under your supervision.

D. Maximum Permissible Exposures to Concentrations of Radioactive Material in Restricted Areas

No Principal Investigator or approved user shall possess or use radionuclides in such a manner as to result in an individual being present in an area where the concentration of radioactive material approaches the concentration given in Table 1 (next page). Radiation Control personnel may obtain air samples to check the air concentration levels in laboratories. In the event airborne contamination is suspected, the Radiation Control Office should be contacted immediately.

E. Reporting Overexposures

In the event an exposure occurs which is suspected to exceed the University's maximum permissible exposures, the Radiation Control Officer is to be notified immediately.

The investigator responsible for the area in which a radiation exposure equal to or exceeding the University's maximum permissible exposures occurs shall provide the Radiation Control Office with written details of the exposure and describe procedures which will be followed to prevent recurrence of such an exposure.

TABLE I
ANNUAL LIMITS ON INTAKE (ALI) AND DERIVED AIR CONCENTRATIONS
(DAC) OF SELECTED RADIONUCLIDES IN AIR ABOVE NATURAL
BACKGROUND IN RESTRICTED AREAS*

Isotope	Inhalation (ALI) Microcurie	(ADC) Microcuries/ml
Agron -41	-----	3 x 10 ⁻¹⁰
Caesium-137	8 x 10 ⁻¹²	4 x 10 ⁻⁹
Carbon-14 (compounds)	2 x 10 ⁻¹⁰	1 x 10 ⁻¹⁰
Chlorine-36 (alkali metals)	2 x 10 ⁻¹⁰	1 x 10 ⁻¹⁰
Chlorine-36 (lanthanide series)	2 x 10 ⁻¹²	1 x 10 ⁻¹¹
Chromium-51	5 x 10 ⁻¹¹	2 x 10 ⁻¹⁰
Cobalt-57	7 x 10 ⁻¹²	3 x 10 ⁻¹¹
Copper-64	3 x 10 ⁻¹¹	1 x 10 ⁻¹⁰
Gold-198	4 x 10 ⁻¹⁰	2 x 10 ⁻¹⁰
Hydrogen-3	8 x 10 ⁻¹¹	2 x 10 ⁻¹⁰
Indium-111	6 x 10 ⁻¹⁰	3 x 10 ⁻¹⁰
Iodine-125	6 x 10 ⁻¹¹	3 x 10 ⁻⁹
Iodine-131	5 x 10 ⁻¹¹	2 x 10 ⁻¹⁰
Iron-55	2 x 10 ⁻¹⁰	8 x 10 ⁻¹¹
Iron-59	3 x 10 ⁻¹²	1 x 10 ⁻¹¹
Manganese-54	9 x 10 ⁻¹²	4 x 10 ⁻¹¹
Mercury-203 (organic)	8 x 10 ⁻¹²	3 x 10 ⁻¹¹
Molybdenum-99	3 x 10 ⁻¹⁰	1 x 10 ⁻¹⁰
Nickel-63	2 x 10 ⁻¹⁰	7 x 10 ⁻¹¹
Phosphorus-32	9 x 10 ⁻¹²	4 x 10 ⁻¹¹
Phosphorus-33	8 x 10 ⁻¹⁰	4 x 10 ⁻¹⁰
Potassium-42	5 x 10 ⁻¹⁰	2 x 10 ⁻¹⁰
Radium-226	6 x 10 ⁻¹¹	3 x 10 ⁻¹⁰
Radon-222	1 x 10 ⁻¹²	3 x 10 ⁻⁹
Sodium-22	6 x 10 ⁻¹²	3 x 10 ⁻¹¹
Sodium-24	5 x 10 ⁻¹⁰	2 x 10 ⁻¹⁰
Strontium-85 (soluble)	3 x 10 ⁻¹⁰	1 x 10 ⁻¹⁰
Strontium-89	8 x 10 ⁻¹²	4 x 10 ⁻¹¹
Strontium-90 (soluble)	2 x 10 ⁻¹¹	8 x 10 ⁻¹¹
Sulfur-35	1 x 10 ⁻¹¹	6 x 10 ⁻¹⁰
Technetium-99m	2 x 10 ⁻¹⁰	6 x 10 ⁻¹⁰
Thorium-230	6 x 10 ⁻¹⁰	3 x 10 ⁻¹²
Thorium-232	1 x 10 ⁻¹⁰	5 x 10 ⁻¹³
Tin-113	1 x 10 ⁻¹⁰	5 x 10 ⁻¹¹
Uranium-Natural	1 x 10 ⁻¹⁰	5 x 10 ⁻¹⁰
Xenon-133	-----	1 x 10 ⁻¹¹
Yttrium-90	7 x 10 ⁻¹²	3 x 10 ⁻¹¹
Zinc-65	3 x 10 ⁻¹²	1 x 10 ⁻¹¹

*REFERENCE: TITLE 10, Part 20; Standards for Protection Against Ionizing Radiation; Appendix B, Table I, Columns 2

VI. BIOASSAY PROGRAM

A. Biological Samples

Biological samples may be taken from all personnel working with the heavy elements, millicurie quantities of tritium and the training reactor, at intervals specified by the Radiation Control Officer. Biological samples will be taken from all personnel who have ingested or who are suspected to have ingested, radioactive material and on other occasions deemed necessary. Requirements of the bioassay program for tritium are found in Chapter III, Application of Bioassay for Tritium.

B. Partial body/whole body counting

Thyroid monitoring of individuals working with radioiodine is required as specified in Chapter III, Application of Bioassay for I-125 and I-131.

C. Participation

All personnel working with tritium and radioiodine will receive a questionnaire each month regarding their use of these radionuclides. If the amount of activity used does not meet the participation criteria this fact should be noted on the questionnaire. The questionnaire serves to remind individuals of the program requirements and to verify participation of all individuals in the program.

Analysis for other radionuclides can be performed upon request.

VII. TRAINING IN THE USE OF RADIOACTIVE MATERIALS AND OTHER SOURCES OF IONIZING RADIATION

Since the RCO, RCC and/or HURRC are required to ascertain that all individuals authorized to handle radioactive materials are competent to do so, the following standards and definitions are established in this regard.

A. Definitions

The Principal Investigator is the individual ultimately responsible for planning, initiating and ultimately interpreting the results of the particular research or project employing radioactive sources. He may or may not be identical with the Chief Experimentalist in charge of executing the work. In addition, there may be experienced assistants or trainees associated with the work. Any of these individuals might be faculty, staff, students, or authorized visitors to the University.

B. Training and Experience Requirements for Radionuclide Use

Either the Principal Investigator or Chief Experimentalist must possess formal course or on the job training in all categories (A, B, C, D) called for on the Form RC-1, Statement of Training and Experience. A faculty associate, who does have this training and experience and will take responsibility for the radiation safety aspects of planning and execution of the experiment, must be added to the professional team undertaking the work, if the above requirement is not met. The level and extent of training and/or experience must commensurate with the amount and type of radioactive material to be employed, extent of hazard involved and sophistication of the techniques being employed. No individual may work independently with radioactive materials unless he has been approved by the Radiation Control Committee in regards to training and experience. Trainees (whether students or otherwise), may handle radioactive materials only under the direct supervision of an authorized experience worker. Experienced, authorized workers may undertake to train previously inexperienced individuals in the use of radionuclide techniques using the traditional, well-accepted Preceptor Method ("on the job training"). However, the individual in question must possess appropriate general technical experience and education to undertake the work, and his credentials must be registered with the Radiation Control Officer.

Furthermore, the nature of the initial experimental work undertaken must be appropriate for the training of the inexperienced individual. Since preceptor training alone has limitations, however, formal or informal coursework may be required in some cases (see below).

C. Training and Experience Requirements for Use of Sealed Sources or Radiation Producing Devices

The Principal Investigator or Facility Manager in charge of any major radiation facility must be qualified in all aspects as listed on the Statement of Training and Experience form. Generally, other individuals can be designated as approved users of the device in question provided they are formally trained in the normal use of the device, potential hazards, safety precautions and emergency procedures. In recent years, it has become common to include a moderate amount of radioactive materials in certain devices designated for laboratory use such as gas chromatography electron capture detectors. To use such a device, the Principal Investigator is not necessarily required to meet all training requirements for general use of radioactive materials, but must be able to demonstrate competency in regards to use of the device, potential hazards, safety precautions and emergency procedures. The PI is responsible for the adequate training of his/her personnel and ensuring that the device is registered appropriately for use.

D. Formal or Informal Coursework

Individuals applying to use radioactive materials may be required by the Radiation Control Committee to successfully pursue a formal University course, short course or other organized training session, in the following circumstances:

1. When neither the Principal Investigator nor Chief Experimentalist has either formal or on the job training in radiotracer methods, and no appropriate co-investigator can be located.
2. When the duration of the work, level of radiation involved, or degree of sophistication of the work suggest that preceptor training alone may be inadequate. In general, the Principal Investigator should require inexperienced associates to obtain some formal training if the duration of the work will exceed three months; if the amount of radioactive materials in use at one time exceeds about 1 mCi (depending on the hazards of the isotope in question); if several different isotopes are to be employed; or, if the procedures used will obviously be hazardous or difficult (examples: vacuum line manipulation of high-level samples; multiple-step organic synthesis of high-level samples).
3. Where the initial level of training and experience of the trainee is inadequate to begin the preceptor training.

E. The Radiation Control Officer, Radiation Control Committee and/or Human Use of Radioisotopes and Radiation Committee may disapprove or terminate any project involving a serious violation of these standards.

VIII. TRANSFER OF RADIONUCLIDES AND OTHER SOURCES OF IONIZING RADIATION

A. On Campus Transfers

Since approval for the procurement and use of sources of ionizing radiation was initially given for the original working area, proposed research and under the supervision of the approved Principal Investigator; radioactive materials and other sources of ionizing radiation shall not be transferred from one area to another without approval of the Radiation Control Officer or his designee.

After approval, transfers must be recorded in the laboratory's radionuclide utilization forms.

B. Off Campus Transfers

Radioactive material and other sources of ionizing radiation shall not be shipped or transferred to, or from any University facility, or outside organization without prior approval of the Radiation Control Officer or his designee.

C. Disposal of Equipment Containing Radioactive Material

Prior to the disposal of obsolete or irreparable equipment (refrigerators, liquid scintillation counters, gas chromatographs, etc.), the Radiation Control Office must be notified in order to remove warning labels and sources and to verify the absence of contamination.

IX. RADIOACTIVE WASTE DISPOSAL

A. Procedures

Radioactive waste disposal procedures are applicable to the majority of waste generated in laboratories. The Radiation Control Office should be contacted for disposal information for unusual types of waste. In addition to the radioactive material warning label, waste must be identified as to other hazards present such as poisons, carcinogens, organics or corrosives. Red or biohazard bagged waste will not be picked up. If you have active biohazardous waste and are unsure of an inactivation procedure, contact the Biological Safety Officer (2-1591). After biohazardous waste has been inactivated, the red bag must be over bagged with another nonred bag.

B. Waste Reduction Methods

1. Minimize waste by preventing unnecessary contamination.
2. Clean and reuse lab equipment when possible. RECYCLE.
3. Only dispose of materials that are actually contaminated. Packing materials and boxes which have not been in contact with radioactive material shall be disposed of in regular trash after radioactive warning labels have been removed or obliterated. If a spill occurs on mat paper, only the contaminated area should be placed with radioactive waste. Remaining paper may be placed

in regular trash. SEPARATE RADIOACTIVE WASTE FROM NON-RADIOACTIVE WASTE.

4. Review your procedures and determine what processes contaminate clean material and formulate measures to minimize amount of contamination, e.g., unnecessary transfer between pieces of glassware. PREPLAN.
5. Your commitment is absolutely essential to achieve volume reduction and to assure ongoing employee training that reduces contamination.

X. RADIONUCLIDE INVENTORY

Each Principal Investigator is responsible for providing quarterly radionuclide inventory reports to the Radiation Control Office. Permanent records of inventories shall be maintained by the Principal Investigator for review by Radiation Control and DOH inspectors. Record forms are available from Radiation Control. Maintenance of the laboratory's utilization forms will facilitate the completion of the quarterly inventory form.

UTILIZATION FORM INSTRUCTIONS:

Accountability of radioactive material is of great importance in maintaining compliance with license requirements.

1. A Utilization Form should be initiated as soon as material is received. Each shipment should have a separate Utilization Form dated for shipment receipt.
2. An entry must be made on this form each time there is a radionuclide usage and the form must be maintained for use until the material is fully depleted or becomes waste.
3. An entry must be made on this form each time radionuclides are transferred to ANOTHER Principal Investigator.
4. Each Principal Investigator who receives radionuclides via on-campus transfers must keep and maintain a Radionuclide Utilization Form. All Transfers must be approved by the Radiation Control Department prior to the Transfer.
5. An entry must be made on this form when radionuclides are received via transfer or shipment and each time those radionuclides are used.
6. Accurate and regular use of the Utilization Forms facilitates the completion of the Quarterly Radionuclide Inventory Form.

XI. RADIATION CAUTION SIGNS, NOTICES, AND POSTERS

Each Principal Investigator is responsible for the posting of proper radiation warning signs in all areas in which ionizing radiations are used. Appropriate warning signs are available from the Radiation Control Office.

The following must be posted in each radionuclide lab:

Emergency Notification
Emergency Procedures

Notice to Employees
Safety Rules for a Radionuclide Laboratory

All radiation labels on empty shipping containers must be removed or defaced prior to disposing of the container in regular trash.

XII. RADIATION FACILITIES

Ionizing radiations are not to be used in any University facility without approval of the Radiation Control Committee and/or the Radiation Control Officer from the standpoint of radiation safety. Plans for all new buildings and modifications of existing structures, where radionuclides or radiation producing machines are to be used, must be approved by the Radiation Control Committee prior to the construction or modification of the structure.

Prior to termination of activities involving radionuclides and radiation producing devices, the Radiation Control Office must be notified in order to assure that facilities are free from contamination and that transfer of material is in accordance with regulations.

XIII. SEALED SOURCE LEAK TESTS

All gamma and neutron sealed sources shall be leak tested at intervals not to exceed six months, and all alpha sealed sources shall be leak tested at intervals not to exceed three months, unless more frequent intervals are prescribed by the Radiation Control Officer and/or the Radiation Control Committee. Leak tests shall be performed according to Radiation Control Techniques.

XIV. REGISTRATION OF DEVICES CAPABLE OF PRODUCING IONIZING RADIATION

All machines and apparatus capable of producing ionizing and nonionizing radiation in potentially hazardous quantities must be registered with the Radiation Control Office. The following types of machines and apparatus are among those to be registered:

1. Medical and dental x-ray machines
2. X-Ray diffraction units
3. Electron microscopes
4. Particle accelerators
5. Static eliminators functioning by emitting ionizing radiations
6. Beta ray gauges and gas chromatographs with ECD
7. Devices using sealed gamma radiation sources (e.g., teletherapy units, radiators, moisture density gauges, etc.)
8. Lasers and equipment incorporating a laser

When registering such devices with the Radiation Control Office, the following information is to be provided:

1. Description of the equipment, including type, make, model, peak kilovoltage, peak milliamperage, and date of installation. (For particle accelerators or other "special apparatus", provide the pertinent specifications when the equipment is not described by this information.)
2. Location of installation, to include building and room number.
3. Department and/or person responsible for operation of the device.

XV. RADIATION SAFETY CRITERIA VIOLATION ENFORCEMENT POLICY

A. Introduction

The Radiation Control Committee believes that there are good working relationships between the RCO and most Principal Investigators (P.I.) and that continued noncompliance with established safety rules is a rare occurrence. The Committee recognizes the possibility of a problem and has established a three-stage follow-up enforcement program. The policy outlined below would retain the initial follow-up authority with the RCO but would establish a more formalized and deadline triggered procedure. If the initial efforts of the RCO or his designee are unsuccessful, the Radiation Control Committee would involve itself and take steps as appropriate to obtain compliance.

B. Enforcement Follow-up Procedures

Initial Follow-up

Following the identification of a deficiency in radiation safety criteria, the RCO or his designee will notify the P.I. in writing. A suggestion of how compliance with University procedures can be achieved will be included and the P.I. will be asked to notify the RCO or his designee in 10 days of the status of his efforts to make the correction. To facilitate compliance on the part of the P.I., a standard form will be developed on which the violation will be identified with space to identify the correction carried out.

If the violation is of a major nature, the laboratory will be scheduled for a follow-up inspection.

Department Head Notification

If the RCO or his designee is not able to achieve compliance through the initial efforts outlined above, the status of the situation will be brought to the attention of the P.I.'s department head. The department head will be asked to assist the RCO or his designee in making the corrections. If for any reason this second stage does not achieve compliance, the direct input of the Radiation Control Committee will be used.

Radiation Control Committee

If direct action of the RCO and the requested assistance of the department head have not achieved correction of a safety violation, the RCC will take direct action. The Committee will review the situation to determine the seriousness of the identified violation and the action of the investigator. The P.I. will be requested to meet directly with the Committee to outline why he has not been able to comply. The Committee will take whatever action is appropriate to achieve compliance. The action may vary from situation to situation, but could be full support of the RCO's action to remove the P.I. approval to work with radioactive materials.

XVI. EMERGENCY PROCEDURES

A. Minor Spills: (Less than 100 microcuries of activity and/or 5 mR/hr)

1. NOTIFY: Notify persons in the area that a radioactive spill has occurred.
2. PREVENT THE SPREAD: Cover the spill with absorbent paper.
3. REPORT: Report incident to the Radiation Control Office (392-7359 or 392-1589). If possible have someone not involved in the spill make the report. In the event the RCO cannot be reached, utilize Emergency Call List (Page 34).
4. CLEAN UP: Use disposable gloves (and remote handling tongs for high energy beta's and gammas). Do not spread contamination – use absorbent paper and carefully wipe spill from outside to inside. Insert into a plastic bag and dispose all waste in a radioactive waste container. Include all other contaminated materials such as disposable gloves.
5. SURVEY: If using an isotope other than a low energy beta emitter, use a survey meter and check the area around the spill, and your hands, shoes, and clothing for contamination. A swipe survey should be performed to demonstrate that decontamination results are below the University of Florida limit of 100 dpm/100 cm².

B. Major Spills: (More than 100 microcuries of activity and/or 5 mR/hr)

1. CLEAR THE AREA: Notify all persons not involved in the spill to vacate the room. These people shall remain near the room to be checked for contamination.
2. PREVENT THE SPREAD: Cover the spill with absorbent pads, but do not attempt to clean it up. Confine the movement of all personnel potentially contaminated to prevent the spread.
3. CALL FOR HELP: Notify the Radiation Control Office (392-7359 or 392-1589) immediately. If possible have someone not involved in the spill make the notification. In the event the Radiation Control Office cannot be reached, utilize Emergency Call List (Page 34).
4. SHIELD THE SOURCE: If possible shield the spill, but only if it can be done without further contamination or without significantly increasing your radiation exposure.
5. CLOSE THE ROOM: Leave the room and lock the door(s) to prevent entry. Post a sign "Contamination DO NOT enter until cleared by Radiation Control."
6. PERSONNEL DECONTAMINATION: Contaminated clothing should be removed and stored for further evaluation by the Radiation Control Office. If the spill is on the skin, flush thoroughly and then wash with mild soap and lukewarm water. Proceed to decontaminate and survey under the direction of a Radiation Control Representative.
7. FACILITY DECONTAMINATION:
 - a. Upon direction of the Radiation Control Office, proceed to clean up spill and survey as in A5) and B.6) above.
 - b. Shoe covers may be used to prevent personal contamination.

- c. Both body and extremity badges may be required.

NOTE: Decontamination procedures necessary shall be the responsibility of the experimenter and/or his supervisor and shall be carried out under the direction of the Radiation Control Officer or persons designated by him, and with the cognizance of the other University officials who may be responsible for the facility or laboratory.

XVII. SPECIAL PROCEDURES FOR ANIMAL USE IN RESEARCH

- A. Use of animals in research shall conform to rules in the "Guide for the Care and Use of Laboratory Animals" and/or those policies of the Institution's Animal Care and Use Committee.**
- B. All safety precautions for a radionuclide laboratory must be followed.**
 - 1. Animals given radioactive materials shall be caged separately from other animals.
 - 2. Cages shall be labeled with appropriate radiation warning signs. Information on the label shall include the name of the person responsible for the experiment, the isotope, quantity and date of administration. Prior to cleaning, cages must be surveyed for contamination and decontaminated if necessary. Cages are to be labeled indicating that they are not contaminated prior to routine cleaning.
 - 3. Animals which receive radionuclides and are not sacrificed at the termination of the study must be properly identified and controlled. Radiation Control Office approval will be required prior to relocation of any such animals.
 - 4. Radioactive excreta, animal carcasses and tissues, contaminated cage bedding, etc., must be handled in accordance with radioactive waste disposal procedures. (Chapter VI)
 - 5. Provisions must be made for projects likely to produce large quantities of waste or involve unusual contamination potentials to assure that lab facilities are adequate.
 - 6. Principal Investigators are responsible for assuring that animal caretakers and custodians are aware of potential hazards and are adequately trained and supervised in the observance of necessary precautions.
 - 7. The requirements for isolation and ventilation shall be approved by the Radiation Control Office.
 - 8. Animals which have been administered radioactive materials or their products shall not be used for human consumption.

XVIII. RADIATION CONTROL AND RADIOLOGICAL SERVICES DEPARTMENT

- A. GOAL: To assure the radiological safety of all University students, employees and visitors as well as the environment.**

B. FUNCTIONAL AREAS:

1. **Radionuclide Procurement**

All Requisitions to Purchase and Purchase Orders for radioactive material in any form must be approved by the Radiation Control Officer. All users of radioactive material must receive initial approval from the Radiation Control Committee. Guidelines for submission of proposals to use radioactive material are available from the Radiation Control Office.

2. **Radionuclide Package Receipt and Delivery**

The University is licensed to receive radioactive material only at the Radiation Control Office at Building #683. The Radiation Control staff receives, inspects, and verifies documentation prior to the delivery of the material to the user.

3. **Radioactive Material Inventory Control**

Principal Investigators are required to maintain a current radionuclide inventory. The University's Radioactive Materials License limits the quantity of radionuclides on campus. As a research lab receives, uses, and disposes of radioactive material, the Principal Investigator is required to keep an accurate inventory of radioactive material in his possession. Inventory records must be maintained for three years after disposal of the material.

4. **Personnel Monitoring**

The Radiation Control Department issues and exchanges personnel dosimeters on a periodic basis. Exposure records are maintained in the Radiation Control Office. A report of badged individual's radiation exposure is distributed to each department. Annual and termination radiation exposure reports are also distributed to individuals.

5. **Bioassay Program**

Users of Iodine and Tritium in amounts greater than or equal to those listed below are required to participate in the Bioassay Program.

Tritium - 10 millicuries per month
Iodine - 1 millicurie per month

The bioassay program is administered through the Radiation Control Office at Building #683.

6. **Laser Registration and Safety**

All lasers of hazard Class II and above are required to be registered with the State of Florida Department of Health, Bureau of Radiation Control. Failure to do so could result in the refusal of registration by the Department. If you are acquiring, transferring or relocating a Class II or above laser, contact the Radiation Control Office so that we may update our inventory and register the laser. Class II and above lasers will be inventoried and inspected annually by the Laser Safety Officer. In addition, all lasers owned by or operated at the University of Florida

must comply with regulations found in Chapter 10D-89 rules. Non-complying lasers will be removed from operation until corrective actions are taken by the Principal Investigator.

7. **Analytical X-Ray Machines**

All x-ray machines are required to be registered with the State of Florida Department of Health, Bureau of Radiation Control. If you are acquiring, transferring or relocating an x-ray machine, contact the Health Center Radiation Control Office so that we may update our inventory and register the machine. The Radiation Control Office inspects x-ray machines annually to insure compliance with regulations found in Chapter 64E-5 rules.

8. **Other Devices Containing Radioactive Materials or Producing Radiation**

All devices containing radioactivity or capable of producing radiation must be registered with the Radiation Control Office. In many cases, the University's license to use radioactive material must be amended to include devices containing radioactive material or capable of producing radiation. If you are acquiring, transferring or relocating a device, contact the Health Center Radiation Control Office.

9. **Radiation Safety Training**

In addition to a 12 hour Radiation Safety Short Course, the Department can provide radiation safety seminars to any campus group that uses radioactive material in other than tracer applications such as sealed sources or radiography. Users are also encouraged to contact the Radiation Control Office with problems or questions regarding any aspect of radiation safety such as lab set-up, proper shielding, waste disposal, radiation detector selection and use.

10. **Calibration of Radiation Detection Instruments**

Laboratories using radioactive materials or radiation producing devices are encouraged and in some cases required to possess radiation detection instruments. Semi-annual calibration and minor repair of these instruments is provided by the Department.

11. **Radioactive Waste Disposal**

The Department provides radioactive waste pick-up and disposal services. Laboratories must follow established guidelines for segregation, packaging, and labeling of radioactive waste containers.

12. **Radiation and Contamination Surveys**

The Principal Investigator is responsible for assuring that contamination surveys are performed on at least a weekly frequency when radioactive materials are in use. If radioactive materials are in storage only, a monthly contamination survey is required. The Health Center Radiation Control Office performs quarterly contamination surveys and radiation safety checks of radionuclide labs.